June 27, 2016

Sent via electronic mail

Dicki Peterson
Western Energy Company
Rosebud Coal Mine Area F
P.O. Box 99
138 Rosebud Lane
Colstrip, MT 59323

Permit ID: C2011003F
Revision Type: N/A
Permitting Action: Deficiency
Subject: Fourth Round Acceptability Deficiency

Dear Dicki:

The Department of Environmental Quality (DEQ) has completed its fourth round acceptability review regarding Western Energy Company's (Western) application for SMP C2011003F. Additional deficiencies have been added with Western's submittal of a revised Post Mine Topography and associated reclamation plan as well as the hydrologic control plan. The following deficiencies must be adequately addressed before DEQ can determine the application acceptable:

82-4-222(1), MCA: A complete and detailed plan for mining and reclamation includes adequate indexing of materials. Two problems were noted which require changes: 1) Appendix E is identified as "Baseline Vegetation," but also includes the "Wetlands Delineation" report. The title page and table of contents must be changed to reflect what is included in Appendix E or Appendix E should be broken up with proper references made throughout the permit. 2) Pond designs are contained in an undefined folder (22 Pond Designs) which should be renamed to an Appendix. A reference to the pond designs must be included in Appendix J and in Subchapter 3 narrative, page 315-1. The table of contents must be changed to reflect the new pond design appendix.

Western must check the entire permit document for other large indexing deficiencies.

The permit must also include adequate referencing. Page 515-1 must include a reference to Appendix S and page S-1 should include a reference to rule ARM 17.24.515 and ARM 17.24.501(4).

ARM 17.24.302(1): The CAD files that match the pdf of Exhibit O1 Phase I – Area F Haul Road Construction Drawing must be submitted.

ARM 17.24.304(1)(e): No photos or descriptions of new Ponds 8 and 9 are included in Appendix B, Attachment B-L. Please include these ponds in Attachment B-L similar to Ponds 1-7. Please also submit whatever field and laboratory data are available for these ponds.

ARM 17.24.304(1)(e): In Appendix B, Table B-18, the end of the text is cut off for several entries in the "Source Name" and "User" columns. Please correct this formatting issue so that all text is visible.

ARM 17.24.304(1)(e): Please provide the data results from the 2015 aquatic surveys included in Appendix B in MSExcel spreadsheet or compatible format.

ARM 17.24.304(1)(e): Tables B-34 and B-35, Appendix B, do not include baseline data for monitored Springs 10 through Spring 14. Please include baseline information for Springs 10 through 14 in these tables.

ARM17.24.304(1)(i)(i): Map 1 is said to include a reference area for Woody Draw community types according to the results section of the Baseline Vegetation Survey. This reference area is not included on the map. Please update Map 1 to include this reference area if it has been established as stated.

Since there is no documented reference area, there is no defined reclamation standard by which to measure against for phase III bond release. These standards need to be developed, or a reference area must be identified.

This item was not addressed in the previous deficiency response. Cover and production numbers have been established from the reference area baseline data that were collected. Woody Plant Density numbers have not been established. As Woody Draws are considered wildlife habitat, they will need to have a woody plant density standard. Please establish a technical standard for woody plant density on Woody Draw community types.

ARM 17.24.305(1)(w): Culverts C-1 thru C-6 depicted on the Exhibit O, Haul Road, must also be depicted on the Exhibit D, Hydrologic Control Plan.

ARM 17.24.312(1)(d): The wetland mitigation plan only discusses impacts to Wetlands B and C in the context of haul road impacts. However, the PHC and submitted mine plan indicate that portions of these wetlands will be mined through, including supply springs. Further, the PHC also includes Wetlands D, E, F-081, F, and F028 as potentially impacted by mining or roads. Any wetland assessment and mitigation plan should include all potentially impacted wetlands. As part of permit acceptability, a final wetland mitigation plan should be submitted and approved. The final wetland mitigation plan should include measures to restore or avoid disturbance to wetlands per 17.24.751(2)(f), including on-site mitigations such as wetland restoration, creation, or enhancement. If on-site mitigation is unfeasible, particularly in the case of Wetlands B and C, off-site mitigation (e.g. other mine areas) may be necessary.

ARM 17.24.313(1): Please submit field survey data for all measured channel cross-sections in Exhibit J-1. Data must be in MSExcel or a format that will allow DEQ to recreate and conduct numeric analysis on these cross-sections. CAD data is not sufficient.

ARM 17.24.313(1): Please submit all data tables J-1 through J-6 in MSExcel or compatible format.

ARM 17.24.313(1): Table 313-9. It is not understood how cross section data from Appendix J were used to create Table 313-9. How were individual cross-sections evaluated for the flow-recurrence intervals presented in the first column? Maximum channel depths appear to be very large, and not representative of actual channel depth in ephemeral drainages (i.e. channel depth of

22ft implies that this depth is the 'active' channel depth) for the purposes of hydrogeomorphic analysis. For each cross section location, please provide a table of 1) watershed area above cross-section, 2) slope of the channel segment 3) floodplain or valley-bottom width at cross section. Please discuss this reclamation approach with DEQ hydrologists.

ARM 17.24.313(1): Exhibit B and Exhibit B1 include line features labeled "Additional Drainage Feature" in the legend. No explanation of these features could be located in the permit. Please provide an explanation of these map features.

ARM 17.24.313(1)(c): The initial bond calculation was submitted with the February 2016 response to deficiencies. The following deficiencies must be adequately addressed.

1. There are 24,700,459 lcy of truck backfill listed on Page G-3: it appears that this is an error and should be 2,470,046 lcy.
2. The derivation of the push and haul distances used on pages G-3 (backfilling/grading) and G-7 (soils) must be provided in the form of tables. These tables summarize and weight average the block to block information depicted on corresponding maps.

ARM 17.24.313(1)(d)(iv) and 501(4): Exhibit B and B1 appear to present a postmine topography that meets the performance standards. Additional support for this finding is found in Exhibit T1 and Exhibit T2; however, the table in Exhibit T1 depicts some erroneous information in the "Percent of Total" column (20 to 25 percent range). The 4.73% and 4.49% reported should be closer to 13%. The actual numbers must be included in the table.

ARM 17.24.313(1)(g)(ii) and (iii): The soil balance in the soil survey Appendix G, Table 1. Pre-mine Acreages, Salvage Depths, and Volumes for Area F, indicate less than 1 foot each of topsoil and subsoil will be salvaged during the project. The balance shows 0.77ft (9.2 in) and 0.78ft (9.4 in) of material salvaged over the projected 6,743 acres. This is not consistent with the designated 1 foot topsoil and 1 foot subsoil salvage plan. This is due to a third lift designation in Table 1. The third lift material volume is 1.55 feet of material over the disturbance acreage and must be part of the salvage volume. The third lift materials would mostly fall into the tree soils category and should be indicated as tree soil.

Please change the lift three category in"Table 1. Pre-mine Acreages, Salvage Depths, and Volumes for Area F" (appendix G). Soil in the lift three category will be designated tree soil.

Appendix G

DEQ is in agreement that the selenium levels are not usual for the region. The testing plan for verification is an acceptable approach to check validity of the original. If in fact the original data are wrong this will be proven prior to accepting the soil handling plan.

If the original data are correct, and in fact selenium is elevated, the permit language will have to be rewritten to address the high selenium values. Whether the new language is a plan to ameliorate the selenium, or a demonstration that selenium is not a problem the semonstration must be complete before the soils handling plan is acceptable.

ARM17.24.313(1)(h)(iv): The narrative for this rule subsection states that reclamation will be in compliance with ARM 17.24.716(5). This rule does not exist. Please add language to this section indicating how the reclamation plan will be consistent with the requirements of this subsection,

"introduced species to be used, if any, and documentation of the desirability and necessity of using the introduced species to achieve the approved post mining land use."

ARM 17.24.314(2): GIS layers submitted in Appendix O do not match those layers submitted in CAD. It appears that some of the Appendix O layers were from past submittals. The most recent submittal has adjusted CAD layers that presumably were not updated in Appendix O (i.e. stockpile layers, for one). Please update all GIS or CAD layers with the most recent mine plan layers.

ARM 17.24.314(2): Narrative in Appendix J, Page 3, states that, "*As the water will attain all effluent standards required in the MPDES permit, the discharge produces water suitable for downstream use by wildlife, livestock, and native vegetation.*" No MPDES effluent limitations information regarding MPDES permit limits are provided in the application. MPDES effluent limitations for coal mining discharge permits typically include TSS, Total Settleable Solids, Iron, and Oil and Grease, while pit water pumped to sediment ponds may have high levels of sulfate, sodium, conductivity and/or other constituents not regulated by MPDES permits. Please describe and present an evaluation of the anticipated quality of pit-pumped water, the requirements for water suitability for wildlife, livestock and vegetation, and how pit-pumped water compares to these requirements. If this analysis is provided elsewhere, please reference and summarize that analysis in Appendix J.

ARM 17.24.314(2)(a): Exhibit D, Hydro Control Plan

a. Exhibit D must show any planned ditches for routing water (haul and access road ditches). All drainage structures must be connected in a network to ponds, traps, sumps, etc.
b. Exhibit D must show the drainage areas for all sediment ponds and traps (i.e. delineate the entire area that drains to each individual pond on the drainage control map). Pond drainage areas must be submitted in CAD with Exhibit D.
c. Where culverts are used, permitee must demonstrate that they meet requirements of ARM 17.24.605. The legend should have a separate feature for culvert and a different feature for low water crossing. According to ARM 17.24.321(2) the plans for low-water crossings must be certified by a qualified licensed professional engineer. Please correct the legend of the Exhibit D Hydrologic Control Plan and submit the certified designs for all low water crossings for review.
d. Ponds F-4 and F-5 appear to be located on or very near burn zone/clinker. These ponds should be located in areas where infiltration to shallow groundwater is limited, or should be lined to prevent losses to clinker and to adjacent alluvium of Black Hank Creek.
e. No proposed MPDES locations are shown on the Exhibit D. Likewise, Table J-9 does not include associated MPDES information. Please update Exhibit D and Table J-9 to include proposed MPDES locations and relevant table references.

ARM 17.24.314(2)(d): Appendix P, Please remove the MQAP from the Area F permit and provide a reference to the Area B permit.

ARM 17.24.314(3): Appendix J, Page 3, states that "*Mining cuts adjacent to alluvium will temporarily reduce groundwater flow from bedrock units to the alluvium. However, this reduction in recharge to the alluvium will have only a small effect on downstream alluvial flows.*" Please describe and present a numeric evaluation of the alluvial depletions expected, and their expected contribution to downstream alluvial flows. If this analysis is provided elsewhere, please reference and summarize that analysis in Appendix J.

ARM 17.24.314(3): Table J-5 appears to compare two very different flow calculation methodologies. One method (SCS) estimates the peak flow result from a specific precipitation (i.e. 2yr/24hour) event upon a watershed, and the other method estimates peak flows from a regression equation derived from observed flood recurrence intervals. The flow calculated from a 2yr/24hr precipitation event is not the same concept as a 2-yr flood recurrence flow and do not lend themselves to meaningful comparison. Please revise and/or remove this comparative analysis.

ARM 17.24.314(3): Appendix O does not do an adequate job of evaluating surface flow losses during active mining. Hydrologic modeling efforts provide numerical runoff estimates. Please use modeled surface flows to enumerate and estimate peak flow reductions and surface flow losses to Robbie Creek, Donley Creek, Black Hank Creek, McClure Creek, and Trail Creek due to runoff impoundment or flow losses from mining operations.

ARM 17.24.314(3): Appendix O, Pg 14, states that "statistically significant correlations of changes in surface water quality to mining have not been observed to date." DEQ does not understand this statement. There has been no mining in Area F yet. If this refers to other areas mined previously, please reference the analysis conducted that reaches this conclusion, and its relevance to Area F.

ARM 17.24.314(3): Appendix O, Pg 14, states that "The sediment control plan will demonstrate that modeled postmine sediment yields will be less than premine yields." How will this be done? Please reference the plan and analysis method that demonstrates this.

ARM 17.24.314(3): Appendix O, Pg 11, states that "surface flows will be augmented by discharges from sediment ponds", seemingly to offset surface runoff detainment (as referenced in the previous sentence). DEQ does not understand how surface flows will be augmented by retention and discharge of runoff flows. Per previous comment, please provide a numerical analysis of how retention of surface water flows will affect stream flows in East Fork Armells Creek.

ARM 17.24.314(3): Appendix O, Pg 13, states that retention of water will result in a "net improvement of downstream water quality during mining". DEQ does not agree that the loss of natural levels of suspended sediment results is an improvement in water quality. Please discuss changes in water quality expected within the context of 'gains' or 'losses' rather than value judgements. Are there other water quality constituents that are expected to change as a result of the retention and release of water? Please also consider this comment when discussing purported 'elevated' levels of any constituent (i.e. "…naturally occurring elevated suspended solids…").

ARM 17.24.314(3): Appendix O, Section 3.3. Aquatic Life, cites the Area F Aquatic Life Survey and states that aquatic organisms identified in the survey are indicative of poor water quality, and cites cattle use and seasonal or intermittent conditions as the probable cause of the poor water quality indicators. It is then concluded that increases in TDS are not expected to significantly change the presence or composition of aquatic life. The conclusion of poor water quality given in the Aquatic Life Survey is based on the Hilsenhoff Index of Biological Integrity (HIBI), which is an indicator of low oxygen levels (typically from nutrient-related stressors) and hence poor water quality. The HIBI is not known to be sensitive to, or an indicator of dissolved solids conditions. It is DEQ's understanding that, while aquatic communities appear to be impacted by livestock use, and may be naturally limited due to seasonal water supply conditions, statements regarding the aquatic community's response to increases in dissolved solids is conjecture. Please review and revise statements regarding aquatic response to mining.

ARM 17.24.314(3): Appendix O, Section 5.0, Mitigation, states that "both the Rosebud coal and sub-McKay sands yield sufficient water for livestock and domestic use." Please include or reference an analysis that assesses and evaluates the suitability of water quality and quantity in these units for both livestock and domestic use.

ARM 17.24.314(3): In Appendix O, Section 3.1.2, page 13, states: "The result is a net improvement of downstream water quality during mining." Reduction of the concentrations of any parameter below natural levels does not qualify as improvement of water quality. Please reword this statement to state: "The result is a net reduction in suspended sediment concentrations during mining."

ARM 17.24.314(3): In Appendix O, Section 3.1.2, page 14, contains a paragraph which discusses alluvial groundwater quality in East Fork Armells Creek. This paragraph is not relevant to surface water in Area F. Please remove this paragraph.

ARM 17.24.314(3): In Appendix O, Section 3.2.2, pages 21 and 22, there is a discussion of potential for changes in groundwater class. Because groundwater classes are defined by "natural specific conductance," they cannot be changed by activities of man. Please rewrite this section to avoid referring to changes in groundwater class. Evaluations of the probable hydrologic consequences of changes in SC should be made based on the listed beneficial uses in ARM 17.30.1006 for the baseline groundwater classes.

ARM 17.24.314(3): In Appendix O, Section 3.3.1, page 24, it is stated there is significant potential that Springs 7, 10, and 11 will be affected by mining. Due to the location of these springs, there is near certainty that all flow from these springs will cease during adjacent mining. Please modify permit language to reflect this most probable outcome.

ARM 17.24.314(3): In Appendix O, Section 3.3.1, page 25, it is stated Spring 13 is sourced from the McKay coal. As this spring is located approximately 0.7 miles upgradient from the McKay coal outcrop this is unlikely. Please correct the source unit listed for this spring.

ARM 17.24.314(3): In Appendix O, Section 3.3.1, pages 24 and 25, there is no discussion of the long term potential for re-emergence of flow at springs which could be affected by mining, or potential changes in water quality at springs downgradient from the spoil. In particular, Springs 7, 10, and 11 produce water of lower conductivity than other springs in the area. If flow at these springs resumes after mining, it is highly unlikely that similar water quality will be present due to the proximity of spoil. Please include a more detailed discussion of the long term impacts to springs.

ARM 17.24.314(3): Appendix O, Table O-5, contains several incorrect references to Section 4.1. Due to the renumbering of sections, DEQ believes these references should cite Section 3.3 instead.

ARM 17.24.314(3): In Appendix O, Section 5.0, is pending a decision on alluvial valley floors. This section must be completed before final review of the PHC can be completed.

ARM 17.24.314(3): In Appendix I-B, Section 2.3, on page 14, the narrative states the maximum extents of the five foot drawdown in the Rosebud coal during mining contour occurs in 2034, as displayed in Figure I-5. While this is true for most of the area, in T2N R38E S25 and S26 the furthest extent of the five foot drawdown contour occurs in 2030. Please revise this section to include this variability in the timing of the maximum extents of drawdown.

ARM 17.24.314(3): Evaluation of the model datasets provided for the Area F model (Appendix I-B), indicates that the lack of drawdown from the majority of mining conducted between Robbie and Donley creeks is due to mine pit drain elevations which are set above the simulated premine steady state water levels in the Rosebud coal. Geologic structure in this area results in higher elevations for the base of the coal in this area than in adjacent areas, which are not simulated by the quasi-3D modeling approach used in the Rosebud model, thus steady state premine water levels in the Rosebud coal are simulated below the bottom of the Rosebud coal. The quasi-3D modeling approach relies on an assumption of confined groundwater conditions, which may be less applicable to the Rosebud coal in Area F compared to the other mine areas. As a result of the limitations of the modeling method and the drain elevations used to simulate mine pit dewatering, the model simulates continued hydrologic connection and flow occurring in the Rosebud coal through the mine pit during mining in this area. There is no simple solution to correct this inaccuracy. Model parameters could be locally altered to maintain higher water levels in this area, or mine pit drain elevations could be lowered to below the simulated water levels. While some balancing of over- and under-prediction is inherent to modeling, overall, calibration of the Rosebud model is less accurate in Area F than in other mine areas. Calibration in the Rosebud coal (model layer 2) in this area could potentially be improved by reducing the recharge in Zone G and extending transmissivity/leakance Zone B northward along the ridge west of Area F. While these changes would likely result in greater underprediction in model layer 4 and 5, this may be able to be balanced by also extending transmissivity/leakance Zone K into the same area as Zone B. If this model inaccuracy cannot be corrected, detailed explanations of the cause of the inaccuracy and its implications on the head, drawdown, and flux predictions of the model must be included in Appendix I-B and Appendix O.

ARM 17.24.315: Western's February 29, 2016 changes to Exhibit D and Table J-10 did not adequately address the conflicting information in the first paragraph, page 14, Appendix J. The disturbed drainage area above Traps 2, 4, 9, 15, 17, 18, 19, 20, 23, and 24 are all larger than the 10 acre commitment on page 14. The 10 acre limit must be changed to 40 acres as accounted for in Attachment J-A, Standard Trap Design or designed ponds must be approved and installed below all of the before mentioned traps.

ARM 17.24.321(1)(c): Western's response did not completely address this deficiency. Revised Exhibit O and the submittal of an Exhibit O1 did not change the orientation of culverts F-HR-2 and F-HR-8. It is likely that a diversion of the native channels will need to be constructed to align the drainage with the culverts. There may also be an issue with culvert F-HR-1 if Pond 2 outlets into the native drainage. While it may be acceptable to change the orientation of culverts HR-2 and HR-8 in the field during installation, it may not be acceptable to build a diversion to align the channel with the designed culvert location without approval pursuant to ARM 17.24.317 and 17.24.635.

Exhibit O1 presents more detail than is required in the permit and should be removed unless Western plans to implement all aspects of the exhibit.

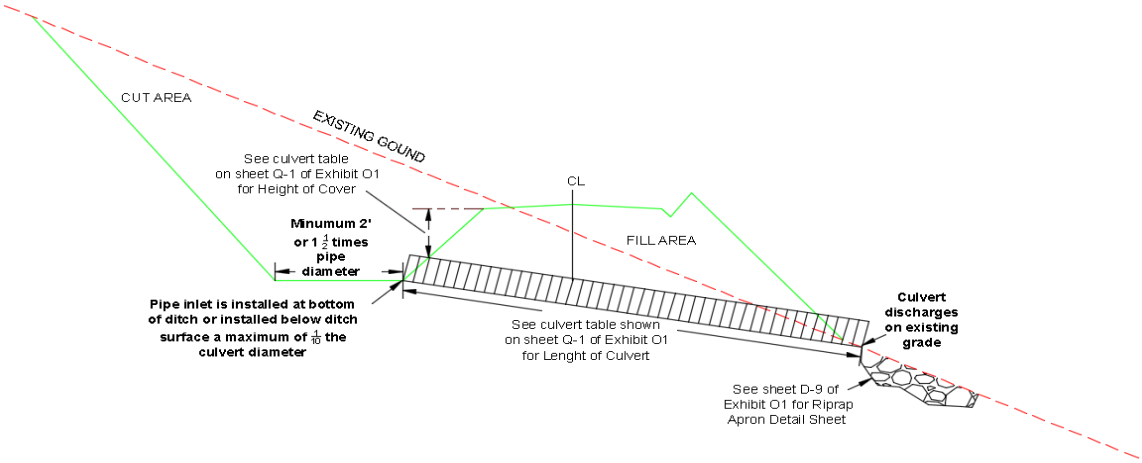
ARM 17.24.321(1) and 314(1): F4 ramp crosses Donely Creek between two mining areas. There are close to four square miles of drainage area above this crossing. The revised Exhibit D depicts an un-designed culvert and low water crossing. While this may be acceptable in practice, an appropriate description of the crossing must be included in the application. The description must include: 1) A profile of the ramp depicting its relation to native topography with an exit and entrance from each mine area and coal removal locations. 2) Up and down gradient profiles of the undisturbed and disturbed portions of Donley Creek. 3) All appropriate hydraulics for the 10-yr,

24-hr event. 3) All appropriate design criteria and flow data for whatever structures are used to construct the crossing.

ARM 17.24.321(3), 301(108), and 601(8): The narrative reference on page 321-3 to submit haul road "as-builts … with the Annual Report" must be revised. The as-built must be submitted within 6 months of the road being used for transport of coal, soil or spoil.

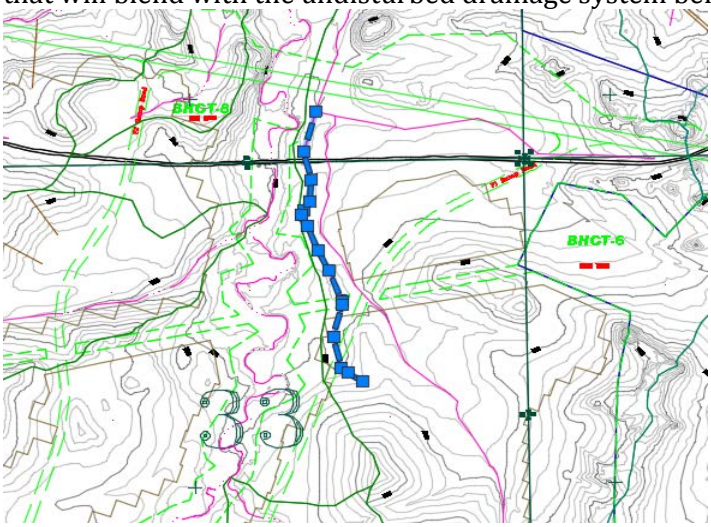
ARM 17.24.321(3): The plans and drawings for Exhibit 01- Phase I Area F Haul Road must be certified by a qualified licensed professional engineer.

ARM 17.24.606(6): Culverts must be constructed to avoid plugging or collapse and erosion at inlet and outlets. The operator must submit a typical culvert cross section that includes installation details that demonstrated that the culverts will be constructed to avoid plugging and erosion at the inlet and outlets. An example of an acceptable typical culvert installation detail is depicted below.



Culvert Typical

ARM 17.24.634(1)(i) The postmine stream channel that is highlighted below was not removed from Exhibit B Post Mine Topography Map. This stream channel does not exhibit characteristics that will blend with the undisturbed drainage system below the area to be reclaimed.



ARM 17.24.723(1): Small mammals are included in the Wildlife Monitoring Plan. A study was conducted on reclamation that allows for mines to no longer study small mammals on reclamation. Please remove the "Small Mammals" portion of the Wildlife Monitoring Plan.

ARM 17.24.723(1): The Revegetation Monitoring Plan for phases I and II is much more in-depth than is required by the rules. MT DEQ Annual Mining Report Standard defines the extent of vegetation monitoring that is required. That text is included here:

"Vegetation monitoring must be conducted on every revegetated field using the Periodic Revegetation Monitoring Form. Each field must be monitored every year after initial seeding or planting until Phase II bond release has been achieved, and at a minimum every third year after Phase II bond release. The initial monitoring assessment must occur either the same calendar year the field was initially seeded or the following calendar year. The form must be completed by a qualified professional.

IMPORTANT NOTE: Periodic vegetation monitoring is meant to serve as a qualitative assessment of how each reclamation field is performing…"

The qualitative approach described is more than sufficient for phase I and II bond release.

Phase III bond release sampling will be compliant with ARM 17.24.726.

Please update the revegetation monitoring plan to reflect this language.

ARM 17.24.726: This rule has been updated since the original application was submitted. Sections 3, 4, 5, and 6 need to reflect this change. Please update permit material for this rule to match current ARM's.

Upon receipt of satisfactory responses to these deficiencies, DEQ will determine the application to be acceptable.

Please feel free to contact Robert D. Smith at 406-444-7444 with questions regarding this letter.

Sincerely,

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Industrial and Energy Minerals Bureau
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C: Jeff Fleischman, Office of Surface Mining
Lauren Mitchell, Office of Surface Mining

FC: 620.169 (Area F)

Gilbert, Sharona

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Subject: C2011003F 4th Round Deficiency
Attachments: SMP_AcceptabilityDeficiency_FourthRoundLetter_Final.pdf

Please see attached electronic correpsondence. Have a great day!

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The best laid schemes o' Mice an' Men,
Gang aft agley ~Robert Burns